

NIH Supported Research Relevant to Native Americans and Childhood Obesity

The following selected list highlights [the National Institutes of Health \(NIH\)](#) supported research relevant to Native Americans and childhood obesity. This list was compiled for the NIH federal partner webpage of the [Let's Move! in Indian Country](#) website hosted by the [Indian Health Service](#).

Native Youth Obesity Interventions

- **[Web-based Family Intervention for Pediatric Obesity](#)**
 - **Background:** One of the challenges in reducing pediatric overweight is that most overweight children do not receive formal, family-based behavioral weight control interventions.
 - **Approach:** With NIH support, researchers at the Oregon Research Institute have created and tested a science-based web site, designed to increase families' and overweight children's awareness of the problem of obesity and to increase their motivation for lifestyle changes, through adoption of healthy diet and physical exercise habits. Their expectation is that pediatricians who identify overweight children in their practices will refer them and their parents to the web site. A substantial proportion of the child and family subjects in this research are Native American.
 - **Key Findings:** A one-month trial of the site found that children using it frequently had significant reductions in their body-mass index, a key measure of body fat, together with improvements in health behaviors and self-efficacy.
 - **Next Steps Include:**
 - Working with a national leader in the use of technology for health promotion to modify and adapt the prototype into a complete intervention program for use in primary pediatric and home settings.
 - Video components and interactive games will be added to the prototype and investigators will test this version in a six-month trial before developing final versions for marketing to pediatricians.
 - Given the health costs stemming from obesity, health insurance companies are also a target market for the final versions.

- *Bright Start: Obesity Prevention in American Indian Children* ([Story M, et al. *Obesity \(Silver Spring\)*. 2012;20\(11\):2241-2249](#))
 - Approach: Developed and tested the effectiveness of a school environment intervention, supplemented with family involvement, to reduce excessive weight gain by increasing physical activity and healthy eating among kindergarten and first-grade American Indian children.
 - Key Findings:
 - The intervention was not associated with statistically significant changes in mean levels of BMI, BMI-Z, skinfolds or percentage of body fat.
 - The intervention was associated with statistically significant net decrease of 10% in the prevalence of overweight.
 - The intervention significantly reduced parent-reported mean child intakes of sugar-sweetened beverages, whole milk and chocolate milk.
 - What Bright Start Adds to Our Understanding of Native Youth Health:
 - Fewer children in the Bright Start intervention group were overweight than children in the control (non-intervening) group (13.4% versus 24.8%).
 - The Bright Start intervention appears to be effective at reducing the consumption of sugar-sweetened beverages, whole milk and chocolate milk.
 - More research is needed to find the most effective approaches to treat or prevent obesity in American Indian children.

- *Child Health Initiative for Lifelong Eating & Exercise (CHILE)*
 - Approach: Used a socioecological approach to implement and evaluate a developmentally appropriate intervention to reduce the risk of overweight/obesity and diabetes among rural American Indian and Hispanic children in Head Start programs in New Mexico that includes a classroom curriculum, teacher and food service training, family engagement, grocery store participation and health care provider support.
 - Key Findings:
 - Head Start is an important setting for preventing obesity ([Cruz, TH, et al. *J Prim Prev*. 2014;35\(3\):135-149](#)).
 - CHILE is a feasible intervention that can be incorporated into Head Start curriculum ([Davis, SM, et al. *J Sch Health*. 2013;83:223-229](#)).
 - Participatory research and formative assessments can help build trust in academic/community partnerships ([Sussman, AL, et al. *Am J Health Educ*. 2010;41\(4\):244-249](#)).
 - What the CHILE Study Adds to Our Understanding of Native Youth Health:

Integrating principles of community engagement and a variety of recruitment strategies can help ensure the success of an obesity prevention project in Head Start childcare centers.



- [Pathways](#)
 - Approach: A landmark study that took place between 1994 and 1996 and used a multi-site, school-based randomized controlled trial involving 1,704 third to fifth grade children in 41 schools among seven American Indian communities in Arizona, New Mexico and South Dakota to examine the use of behavioral and environmental approaches for the prevention of obesity. The intervention involved four components: (1) physical activity, (2) classroom curriculum, (3) school food service and (4) a family intervention.
 - Key Findings:
 - No significant reduction in percentage body fat was reported but a significant reduction in the percentage of energy from fat was observed in the intervention schools ([Caballero B, et al. Am J Clin Nutr. 2003;78:1030-1038](#)).
 - The school food lunch intervention was feasible and resulted in lowering the percent of energy from fat as part of a coordinated obesity prevention program ([Story M, et al. Prev Med. 2003;37:S35-S45](#)).
 - Several positive impacts on obesity-related knowledge, attitudes and behavior were reported ([Stevens J, et al. Prev Med. 2003;37:S70-S79](#)).
 - The intervention contributed to valuable insights about developing, implementing and evaluating school-based interventions with American Indian communities ([Gittelsohn J, et al., Prev Med. 2003;37:S107-S112](#)).
 - What Pathways Adds to Our Understanding of Native Youth Health:
 - A multicomponent program for obesity prevention in elementary schools serving American Indian communities is possible and resulted in several positive changes in fat intake and in food- and health-related knowledge and behaviors.
 - More research is needed to explore if more intense or longer interventions can help reduce or prevent obesity among Native American school-aged children.

Native Youth Obesity Study

- ***Increasing Economic Resources and Obesity: A Quasi-Experimental Study*** ([Jones-Smith JC, Dow WH, Chiccolowska, K. Association between casino opening or expansion and risk of childhood overweight and obesity. JAMA. 2014;311\(9\):929-936](#))
 - Prevalence of overweight or obesity among American Indian children decreased in tribal communities after the opening or expansion of a casino, according to a suggestive new study of the possible impacts on childhood weight in California tribal communities. Obesity is known to be more common among lower-income families.
 - The new study, comparing tribal communities with and without casinos in California, found higher family incomes associated with the opening or expansion of casinos, and the authors speculate that increased income may have improved children's access to healthy foods and recreational opportunities to increase physical activity.
 - The study's finding of an association between casinos and better childhood weight control is not direct proof that the casinos cause this beneficial effect and investigators called for further research.

- ***Partnerships to Prevent Childhood Obesity on the Flathead Indian Reservation***
 - **Approach:** The project aims to use a community-based participatory approach to develop partnerships that establish memoranda of understandings between Flathead Tribal Health, Salish Kootenai College, The University of Montana and at least two community organizations for the purpose of developing research projects, negotiating IRB protocols, developing culture review protocols and submitting research applications. Additional aims will determine a collaborative agenda that identifies community needs and priorities in preventing childhood obesity through an iterative process; educate the public about national guidelines and behavior change strategies for preventing childhood obesity through evidence-based health education and health promotion activities; and evaluate the reach, adoption, implementation and maintenance of the project by collecting social network analyses data. In addition, survey data, attendance and review of timeline and procedures by an Advisory Board will be used to evaluate the project.

Native Youth and Adult Obesity Prevention Project



- [Omnicity: Joining Circles Academic-Community Partnership Conference Series](#)
 - A community-based project focused on youth and adults in state-recognized American Indian tribes in Virginia.
 - Includes community meetings, collaborative workshops, trainings and educational opportunities for public health professionals and community members with a goal of identifying the community's priorities in addressing disparities in health related to obesity.
 - With the oversight of a Community Advisory Board, including two senior high school students (with appropriate parental and tribal permissions), a community-based team and university-based investigators will design and conduct health data collection activities; such data do not now exist for the 11 tribal communities in Virginia.
 - Other activities include identifying data collection tools that are culturally appropriate (or adaptation of existing instruments), with collection done by trained community members.
 - Activities joining traditional healing and cultural practices with scientific best practices in health promotion and education will be employed to engage youth and adults in tribal communities.

Native Youth Cardiovascular Risk Reduction Interventions

- *Community-Responsive Interventions to Reduce Cardiovascular Risk in American Indians*
 - Funded five trials; the following trials specifically tested the effectiveness of interventions targeting children to promote healthy behaviors that are known to impact biological cardiovascular risk factors ([Jobe J, et al. J Primary Prevent. 2012;33:153-159](#)):
 - *Healthy, Children, Strong Families* Intervention was a two-year, community-driven, family-based randomized controlled trial of a healthy lifestyle intervention conducted in partnership with four Wisconsin American Indian tribes ([Adams A, et al. J Primary Prevent. 2012;33:175-185](#));
 - *Project h̄ŋli?dx^w/Healthy Hearts Across Generations* was an American Indian and Alaska Native-run, tribally-based randomized controlled trial designed to evaluate a culturally appropriate cardiovascular risk prevention program for American Indian parents residing in the Pacific Northwest of the United States. The control intervention focused on increasing family cohesiveness, communication and connectedness ([Walters KL, et al. J Primary Prevent. 2012;33:197-207](#)); and
 - *The Prevention of Toddler Obesity and Teeth Health Study* (PTOTS) was a community-partnered randomized controlled trial designed to prevent obesity beginning at birth in American Indian children and developed to test the effectiveness of a multi-component intervention designed to promote breastfeeding, reduce sugar-sweetened beverage consumption, appropriately time the introduction of healthy solid foods and counsel parents to reduce sedentary lifestyles in their children. This study tested a common risk factor approach that simultaneously intervened on factors that are associated with both obesity and with tooth decay ([Karanja N, et al. J Primary Prevent. 2012;33:161-174](#)).

Food Environment Studies with Tribal Communities

- [THRIVE study \(Tribal Health and Resilience in Vulnerable Environments\)](#)
 - [Approach:](#) Led by Dr. Valerie Jernigan, a member of the Choctaw nation in Oklahoma, this study uses community-based participatory research and aims to:
 1. Assess correlates (sociodemographics, health behaviors and perceived food environment) and outcomes (dietary intake including vegetables and fruits, Body Mass Index (BMI), diabetes and hypertension) of food insecurity in the Chickasaw and Choctaw nations in Oklahoma;
 2. Design, implement and evaluate a convenience store intervention to increase the availability and intake of vegetables and fruits among tribal members; and
 3. Create a multimedia manual, co-developed with tribal members, guiding tribes in food environment changes, and disseminated over a free and open source website allowing for tribal user-created content.
 - [Listen](#) to Dr. Jernigan discuss her interesting and diverse career path including her work on this study.
- [The American Indian Healthy Eating Project](#)
 - Funded in part by [Healthy Eating Research](#), a national program of the [Robert Wood Johnson Foundation](#) (ID #66958) and [the National Institutes of Health University of North Carolina-Chapel Hill Interdisciplinary Obesity Training Grant \(T 32 MH075854\)](#), this [innovative project](#) developed policy and planning strategies to improve access to healthy eating within North Carolina tribal communities that were shared widely with participating tribal leaders and throughout Indian Country in a toolkit known as "[Tools for Healthy Tribes](#)". Building on the partnerships and evidence-base developed through the American Indian Healthy Eating Project, the [Kate B. Reynolds Charitable Trust \(KBR\)](#) provided support for a two-year grant awarded to the [North Carolina Commission of Indian Affairs](#) that provided funding directly to tribes and urban Indian organizations in North Carolina to develop, implement and evaluate community changes around active living and healthy eating known as [Healthy Native North Carolinians \(HNNC\)](#). As described in [Healthy Native North Carolinians: Advancing Native Health through Community Changes, Capacity Building and Collaborations](#), participating tribes and organizations leveraged direct support and capacity building resources to advance Native health by focusing on the broader communities in which their people live, pray, study, eat and play. Now led by the [American Indian Center at the University of North Carolina-Chapel Hill](#) and supported by KBR for another two years, twelve tribes and urban Indian organizations in North Carolina continue to work together on meaningful changes and collaborations.

Native Adult Diabetes Research

- The [Diabetes Prevention Program \(DPP\)](#)
 - Approach: A major multicenter clinical research study aimed at discovering whether modest weight loss through dietary changes (reduced fat and calorie intake) and increased physical activity or treatment with the oral diabetes drug metformin (Glucophage) could prevent or delay the onset of type 2 diabetes in study participants (n=3,234 individuals at risk for type 2 diabetes including Native Americans).
 - Relevant Findings:
 - DPP found lifestyle modification lowered risk of diabetes incidence compared to placebo by 58% while metformin medication lowered risk by 31% ([Diabetes Prevention Program Research Group. *New Eng J Med.* 2002;346:393-403.](#)).
 - Effects persisted over 10 years of follow-up ([Diabetes Prevention Program Research Group. *Lancet.* 2009;374:1677-1686.](#)).
 - Related Studies:
 - The “Pima Pride” pilot study indicated that Pima Indians may find a less direct, less structured and more participative intervention more acceptable than a direct and highly structured approach ([Venkat Narayan, KM, et al. *Diabetes Med.* 1998;15:66-72.](#)).
 - [The Special Diabetes Program for Indians Diabetes Prevention \(SDPI-DP\) demonstration project](#) implemented the DPP lifestyle intervention among 36 health care programs serving 80 tribes with a total of 2,553 participants with pre-diabetes and demonstrated the feasibility and potential of translating the lifestyle intervention in diverse American Indian and Alaska Native communities ([Jiang, L, et al. *Diabetes Care.* 2013;36\(7\):2027-2034.](#)).
 - A community-based participatory approach was used to identify culturally relevant ways to translate the DPP to youth among tribally enrolled members of two Montana American Indian reservations and results suggested the resulting *Journey to Native Youth* program was feasible to implement and has the potential to impact behaviors and weight gain associated with risk for type-2 diabetes in Native American youth ([Brown, BD, et al. *Diabetes Educ.* 2010;36\(6\):924-935; Brown B, et al. *Diabetes Educ.* 2013;39\(1\):109-118.](#)).

Native Adult Cardiovascular Risk Reduction Research

- *Community-Responsive Interventions to Reduce Cardiovascular Risk in American Indians*
 - Funded five trials; the following trials specifically tested the effectiveness of interventions targeting adults to promote healthy behaviors that are known to impact biological cardiovascular risk factors ([Jobe J, et al. J Primary Prevent. 2012;33:153-159](#)):
 - *The Balance Study* was a randomized controlled trial designed to reduce cardiovascular disease risk in 200 American Indian participants with metabolic syndrome who reside in southwestern Oklahoma. Participants were randomly assigned to one of two groups—a guided or self-managed group. The guided group attended intervention meetings that comprise education and experience with the following components: diet, exercise, American Indian culture and attention to emotional well-being ([Lee ET, et al. J Primary Prevent. 2012;33:187-196](#)); and
 - *The Lakota Oyate Wicozani Pi Kte* (LOWPK) trial was designed to determine whether a web-based diabetes and nutritional intervention can improve risk factors related to cardiovascular disease among a group of remote reservation-dwelling American Indian men and women with type 2 diabetes who are at high risk for cardiovascular disease ([Henderson JA, et al. J Primary Prevent. 2012;33:209-222](#)).
- [*The Strong Heart Study*](#)
 - The Strong Heart Study (SHS) is a study of cardiovascular disease and its risk factors among American Indian men and women supported by [the National Heart, Lung, and Blood Institute \(NHLBI\)](#) since October 1, 1988 and is the largest epidemiologic study of American Indians ever undertaken. The SHS, which uses standardized methodology, is designed to estimate cardiovascular disease mortality and morbidity and the prevalence of known and suspected cardiovascular disease risk factors in American Indians and to assess the significance of these risk factors in a longitudinal analysis. This population includes a group in which the epidemic of obesity and diabetes has impacted people at very young ages, permitting analysis of genetic and environmental effects on these conditions with limited confounding by age effects.

Native Adult Cancer Prevention Project

- The [*Spirit of Eagles*](#)
 - A community network multidisciplinary project that works on culturally appropriate, long-range, comprehensive cancer control activities and supported community-based participatory research in 38 communities including developing and disseminating culturally appropriate cancer education materials and creating a number of training programs.